



THE UNIVERSITY *of* EDINBURGH

## Edinburgh Research Explorer

### Silivri and the Thracian hinterland of Istanbul: an historic landscape

**Citation for published version:**

Crow, J 2009, 'Silivri and the Thracian hinterland of Istanbul: an historic landscape', *Anatolian Studies: Journal of the British Institute at Ankara*, vol. 59, pp. 167-81.

**Link:**

[Link to publication record in Edinburgh Research Explorer](#)

**Document Version:**

Publisher's PDF, also known as Version of record

**Published In:**

Anatolian Studies: Journal of the British Institute at Ankara

**Publisher Rights Statement:**

Crow, J. (2009). Silivri and the Thracian hinterland of Istanbul: an historic landscape. *Anatolian Studies*, 59, 167-81

**General rights**

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy**

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact [openaccess@ed.ac.uk](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



## Anatolian Studies

<http://journals.cambridge.org/ANK>

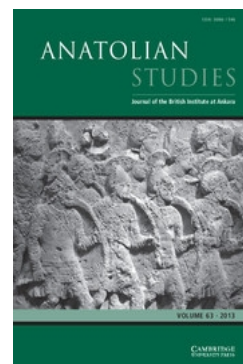
Additional services for **Anatolian Studies**:

Email alerts: [Click here](#)

Subscriptions: [Click here](#)

Commercial reprints: [Click here](#)

Terms of use : [Click here](#)



---

## Silivri and the Thracian hinterland of Istanbul: an historic landscape

Jim Crow and Sam Turner

Anatolian Studies / Volume 59 / December 2009, pp 167 - 181

DOI: 10.1017/S0066154600000958, Published online: 22 February 2012

Link to this article: [http://journals.cambridge.org/abstract\\_S0066154600000958](http://journals.cambridge.org/abstract_S0066154600000958)

### How to cite this article:

Jim Crow and Sam Turner (2009). Silivri and the Thracian hinterland of Istanbul: an historic landscape. *Anatolian Studies*, 59, pp 167-181 doi:10.1017/S0066154600000958

Request Permissions : [Click here](#)

# Silivri and the Thracian hinterland of Istanbul: an historic landscape

Jim Crow<sup>1</sup> and Sam Turner<sup>2</sup>

<sup>1</sup>University of Edinburgh and <sup>2</sup>Newcastle University

## Abstract

Historic Landscape Characterisation (HLC) is a method for mapping, presenting and understanding the landscape with reference to its historical development. By using high-resolution satellite imagery and archive maps we have employed Geographical Information Systems (GIS) to integrate these data with other archaeological and historical sources to create HLC-based case-studies on landscapes in the eastern Mediterranean. This article is one of two pilot studies and aims to map the landscape character in the area around Silivri west of Istanbul. HLC analysis reveals much more diversity and complexity than might be expected. The results have revealed a far greater time-depth than was anticipated with important implications for future landscape research and for regional planning.

## Özet

Tarihi topografyanın karakterize edilmesi (HCL – Historic Landscape Characterisation) bir haritacılık metodu olup, bir topografyanın anlaşılmasında ve tasvir edilmesinde tarihsel gelişiminin de referans alınmasını içermektedir. Doğu Akdeniz topografyaları örnek çalışmalarında kullanılabilecek bir HCL yaratmak için yüksek çözünürlükte uydu görüntüleri ve arşiv haritaları kullandık. Çalışmamıza Coğrafi Bilgilendirme Sistemlerini de (GIS) dahil ederek ilk verilerle, diğer arkeolojik ve tarihi kaynakların bir bütün haline gelmesini sağladık. Bu çalışma iki pilot çalışmadan biri olup, İstanbul'un batısındaki Silivri yerleşimi çevresinin topografik özelliklerinin anlaşılmasını hedeflemektedir. HCL analizleri beklenenden çok daha fazla başkalık ve karmaşıklık ortaya çıkarmıştır. Araştırma sonuçları bölgede tahmin edilenden daha fazla bir zaman derinliği olduğunu ve ileride yürütülecek topografik araştırmalar ve bölge planlama çalışmaları için önemli ipuçları ortaya çıkarmıştır.

The landscapes of the Aegean and western Turkey have often been studied as the settings for historical events rather than as a source for the lives and activities of past societies. In addition, although field survey and other research over the past 30 years have greatly improved our knowledge of these landscapes, there still remains a tendency to focus on the Classical and earlier periods. With a constant surge of development pushing into many rural landscapes, it is increasingly important that we study medieval and post-medieval landscapes to achieve a proper representation and understanding of the more recent past. It was during the medieval and post-medieval periods that the majority of existing monuments and landscapes were created. Understanding the development of these historic, cultural landscapes should be a high priority for academics and policy makers alike, since they form the backdrop to people's everyday lives and provide a key element in our

sense of place and identity. It is essential that they are well understood so that they can be managed effectively and developed sustainably.

The research we report here is intended as a step towards unlocking the history of Mediterranean landscapes using methodologies pioneered in British landscape studies over the last 10–15 years, in particular Historic Landscape Characterisation (HLC). Archaeologists and landscape historians have begun to apply similar techniques outside Britain (for example, Dingwall, Gaffney 2007; Turner, Fairclough 2007), but in the eastern Mediterranean their potential has yet to be realised. The long-term history of this region shows that there are many different ways landscapes and environments can be inhabited and structured. During our project we have mapped and compared landscapes in two study areas: in the Thracian hinterland of Istanbul and on the island of Naxos in the Aegean. This paper introduces

the results of our Turkish case-study in the hinterland of Silivri, Thrace (Trakya); the results from Naxos are presented elsewhere (Crow, Turner 2008; Crow et al. forthcoming). The main aim of our research has been to refine the HLC method to create a pilot characterisation of the historic patterns of fields, woods, lanes and rural settlements in a typical part of coastal Thrace. We believe that in future our approach could be used with data from a wide range of sources, including archaeological field survey, historical documents and ethnographic records, to build up in-depth, long-term and highly-textured accounts of rural life in the region.

### Historic Landscape Characterisation

In the early 1990s British archaeologists became increasingly aware that beyond individual ancient monuments the historic value of the cultural landscape was often ignored during development and planning (Herring 1998: 7–8). In response to this problem, English Heritage sponsored research projects that developed Historic Landscape Characterisation (HLC) as a way to present and analyse the historic nature of the whole landscape. In the UK it has been used to inform research into medieval and later landscapes (Turner 2006a; 2007), and landscape management and planning (Clark et al. 2004; Highways Agency 2006).

HLC maps differ from traditional methods of storing and presenting records about historic landscapes in several ways (Turner 2006b). Generally speaking, archaeological databases provide lists of archaeological sites together with information about each one. These databases can be very sophisticated and an increasing number can be accessed over the internet (for example, Scotland's 'Canmore' database [RCAHMS 'Canmore']; in Turkey the current TAY project provides an overview of regional and period inventories available on the web [TAY 2008]). As inventories of sites they are crucial tools for research, landscape management and planning, particularly for the preservation and enhancement of particular sites. However, there are difficulties with these databases. One problem is that their data on site location are usually limited to dots or lines on a map, so it is hard to appreciate an individual monument as part of an historic landscape, in either the present or the past. Another is that although inventories can be expanded to include more and more different types of sites, they can never record *everything* of historic interest in any given locality. If archaeologists and the public were only interested in great monuments like tumuli, hillforts, Roman fortifications or medieval castles there would be little difficulty. In reality, people know that it is 'ordinary' features like vernacular buildings, field boundaries, lanes and other minor features that in combination give each place its particular historic character.

Historic Landscape Characterisation provides one approach that can help deal with these problems. Unlike an inventory, HLC does *not* map individual archaeological features. Instead, it is a generalising technique that bundles together features that are linked by their historical development and then maps them as areas. This is related to the characterisation techniques applied by ecologists to map habitats and pedologists to create soil maps.

For the purposes of HLC, the researcher needs to understand how patterns of cultural features in the landscape, such as fields, reflect its historical development and how physical features in the landscape relate to each other. Like other types of landscape archaeology, HLC mapping is a subjective process of interpretation that is informed by the physical landscape.

The basis of the method has been described as follows by Peter Herring, who developed the technique in Cornwall (UK):

Closer examination [of the landscape] reveals that particular groupings and patterns of components which recur throughout the county can be seen to have been determined by similar histories. Cornwall's historic landscape can, therefore, be characterised, mapped and described, using a finite number of categories or types of 'historic landscape character' (Herring 1998: 11).

A range of HLC 'types' is usually classified in advance of mapping, which is undertaken using a Geographical Information System (GIS). The characteristics each type might be expected to exhibit are identified through archaeological or historical case-studies. Since little work had been undertaken on the landscape history of this region before our project, we have used retrogressive analysis in parts of our study area to inform the HLC mapping.

Retrogressive analysis is a technique for unravelling the physical and chronological relationships between different elements in the historic landscape (for example, roads, field boundaries; Oosthuizen 2006: 77–79). It works by analysing the relationships of 'horizontal stratigraphy' between cultural features such as lanes and field boundaries to establish the order in which they were created. In our study area, the presence of dated features such as the Anastasian Wall, the aqueducts and other archaeological sites provide a form of 'baseline' for such an approach. This analysis of features in the present landscape has helped us refine HLC character types and provide increased chronological definition for our characterisation.



A related problem is that some areas may include features from several different eras that contribute strongly to the overall character, so that it is unclear which 'type' should be mapped. This consideration also leads to problems associated with 'time-depth': a 'recent' landscape (for example, fields laid out in the 20th century) may contain many features from an earlier form of landscape organisation (for example, medieval strip fields). Using GIS with an explanatory text provides an adequate solution to these difficulties. GIS systems are more flexible than printed maps, because many pieces of information can be presented in relation to each feature or area. For this project, we have linked a database to the GIS which allows a range of attributes to be recorded for each block of each character type. This means the user can build up a relatively detailed picture of the historical development of the landscape.

Because HLC is a flexible method it can be adapted to suit different places and include a range of differing perspectives. Since the data are held in a GIS, it is easy to add data or change the information linked to each unit. We could even add new interpretations or new data to HLCs that have already been 'completed'. HLC is not a monolithic approach, and different workers might choose to characterise the same area in different ways in response to different research questions (Turner 2006b). Since landscape histories vary from region to region, different HLC types will be appropriate in different places. In addition, characterisations can be undertaken at any scale and for a range of different purposes (for example, research into the landscape history of particular periods, or to inform landscape management or spatial planning). The nature and intended uses of a characterisation will affect how it looks and what HLC types are chosen for mapping. The HLC method can therefore be very flexible.

### **Silivri: an historic landscape**

#### *Historical and archaeological background*

The study area lies ca 60km west of Istanbul, and the modern town of Silivri is the successor to Selymbria, a minor Megaran colony dating from the Classical Greek period (fig. 1). It acquired greater significance in the centuries after the foundation of Constantinople in the early fourth century AD. Selymbria was renamed Eudoxiopolis in the fifth century, and acquired new defences and churches until the 13th century (Magdalino 1978; Crow 2002: 343–44). The city figured frequently in the wars between Byzantium and Bulgaria. It fell to the Ottoman Turks with the capture of Constantinople in the 15th century but continued as a major regional centre on the main Balkan route to the capital of the new empire. Descriptions in the late 17th century show it to be a flourishing town with a mixed Moslem and Greek

population (Covel 1998). There have been no specific studies of either the historic landscapes or agrarian history of this region, although there are likely to be extensive documents in the Ottoman archives from the 16th century onwards. There are some accounts by western travellers, but most writers were too dazzled by the prospect of the great city ahead to give much attention to this region. From the later 19th century the demography and land-holdings of eastern Thrace were significantly disrupted by the sequence of military campaigns which foreshadowed the breakup of the Ottoman Empire (Kozanoğlu 1994; Gerolymatos 2002).

An account of the region compiled by British Naval Intelligence during World War I describes the area around Silivri as follows:

The hinterland is bare and uncultivated except in patches of corn. Large quantities of grain could well be grown here. Silivri exports cheese, tobacco, cereals and yoghurt (from March to July) to Constantinople, with which it has a daily steamer service. A large industry of lace-makers employs about 2,000 women in the neighbourhood (Naval Intelligence 1920: 146–47).

In addition, it is also noted that all the villages in the neighbourhood of the coast were surrounded by vineyards. Another section of the report is concerned with land tenure and reads:

No statistics are available about the distribution of the different kinds of property in Turkey; a general statement is found that absentee landlordism is more prevalent and peasant proprietorship is less common in European than in Asiatic Turkey. The nearness of Constantinople, the absence of amenities, the presence of discomforts and dangers in country life make this likely (Naval Intelligence 1920: 154–55).

Following the Treaty of Lausanne in 1922 the extensive Greek Christian population was exchanged for Moslem Turks from northern Greece and the Balkans. Some evidence for the old population survives in 19th century churches at villages such as Fener and in the memories of villagers throughout eastern Thrace (see Kozanoğlu 1994: 142–61). Any assessment of the historic landscapes needs to consider both the potential impact of these recent events on land-tenure and topography, but also the effect of the recent expansion of the city of Istanbul over the past 30 years.

For the medieval period, the historical accounts for this region are largely reliant on excerpts from a range of sources. More specific textual evidence for Byzantine

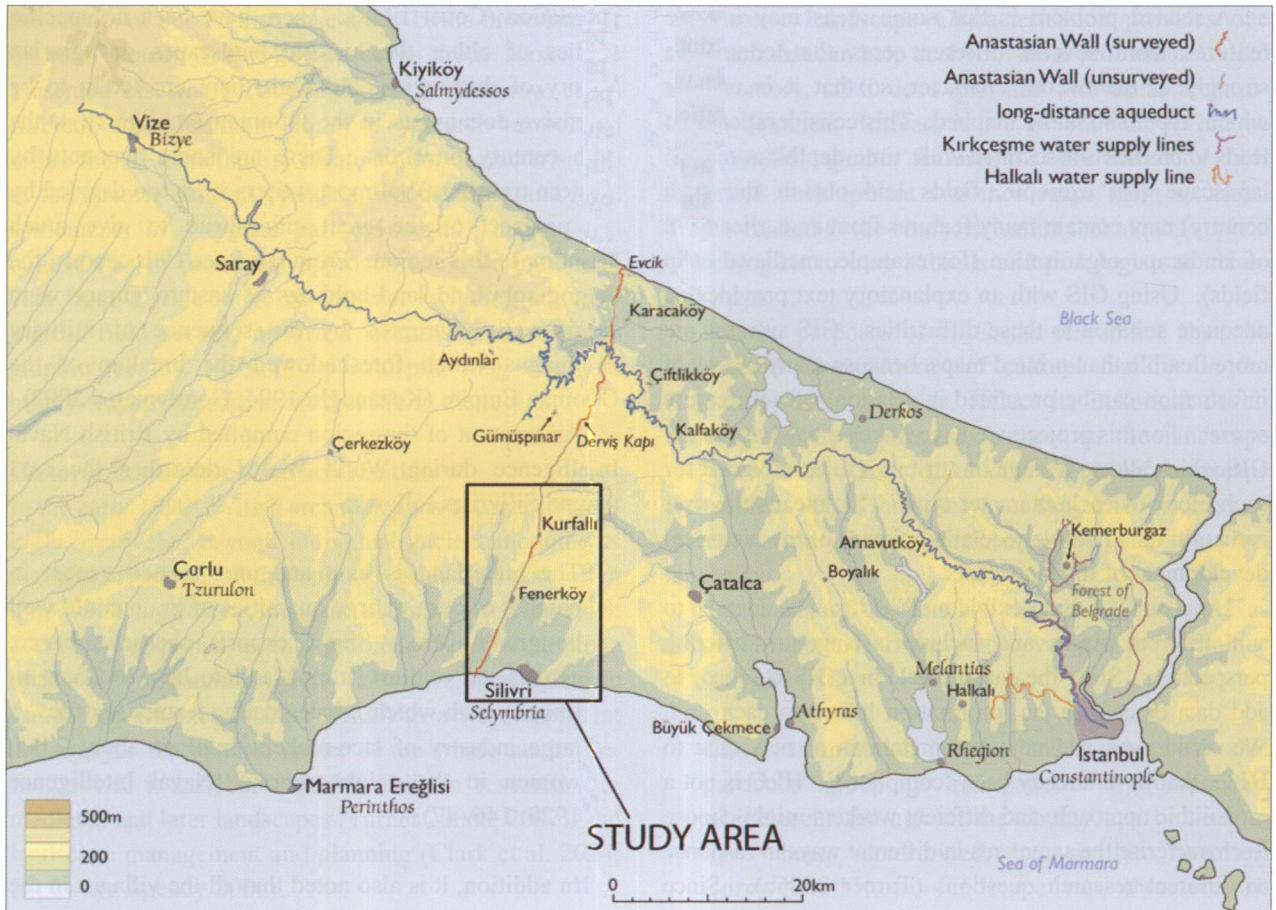


Fig. 1. Location map and study area

agricultural history relies on the detailed accounts largely deriving from the Acts of the great Athonite monastic estates with particular relevance to Byzantine Macedonia (see reviews in Laiou 2002; Lefort 2002). There are far fewer archival sources available for the immediate hinterland of the city (an exception is the typikon of the Pantocrator in Constantinople including estates along the Sea of Marmara around Raideustos and elsewhere; Gautier 1974: 114–15). The study area is likely to have been extensively cultivated since prehistory, but especially from the early seventh century AD onwards when long-distance supplies of grain from Egypt were disrupted and never resumed following the Arab conquest. From this time onwards Constantinople needed to look to the Aegean coastlands of Macedonia and Thrace for its sustenance (Koder 1995; Magdalino 1995). To the west of the study area, the town of Raideustos (modern Tekirdağ) was a major centre for grain collection with a *phoundax*, or state corn exchange, and Herakleia (ancient Perinthos, modern Marmaraereği) housed an imperial granary (Magdalino 1995; Lefort 2002: 250–51, n. 117), both centres attesting the importance of Thrace in the middle Byzantine period as a grain-producing area for the capital. Another feature

of the Thracian hinterland west of Selymbria and Herakleia was a series of monastic and imperial domains (*episkepseis*) strung out along the line of the main military road towards Adrianople as indicated from Alexius III's Chrysobull of 1198 (Magdalino 1995: 41). The most easterly were at Tzouroulou (Çorlu) and Theodoroupolis (Magdalino 1993: 162–69, especially 168).

The clearest evidence for the topography of the district in the middle Byzantine period is found in the accounts of the civil war between Nicephoras Bryennios and the emperor Nicephoras III Botaniates. In his campaign against the emperor in April/May 1078, Bryennios set up his camp in the area west of Selymbria and towards Herakleia at a place called Kedoktos (Gautier 1975: 267, n. 6). The name derives from *aqueductus*, a toponym recorded in Theophanes as '*Ta Akedouktou* near Herakleia' when Michael I and his empress Prokopia were campaigning against the Bulgars in AD 813 (Mango, Scott 1997: 684, n. 23). A decade later, Thomas the Slav was defeated by Bulgarians at *Kedouktos* (Lemerle 1965: 276, n. 87, 88), and the aqueduct seems to have been a landmark where the main military road branched off towards Adrianopolis.

Procopius reported the construction of a sixth century aqueduct for Herakleia, and the remains of a water collection feature have been recorded in Sayar's study of Herakleia (1998: 61–62, map 5, figs 27–29). These remains are located southwest of the village of Büyükçavuşlu on the western edge of the Silivri district. An explanation for the location of these ninth and 11th century battle sites can be recognised from the satellite images of the southern coast of Thrace which show the southern extremity of the densely forested hill country creating a narrow corridor between Herakleia and Selymbria opening out to the east and west (see Crow 1995 for the strategic difficulties created by the Thracian forests, although the precise character of these forests in early periods is not clearly understood).

To the east of Kedoktos, Alexios Komnenos, with the Imperial army, established his camp close to a river that Bryennios in his account of the campaign calls the Halmyros (Gautier 1975: 266, n. 2), close to a fortress (*phourion*) called Kalovryi. This latter place was already attested in the reign of Justinian at the time of the Nika riots when troops from Thrace were called in from Rhegion, Athyras and *Kalobria* to suppress the uprising (*Chronicon Pascale* 622). The accounts of the 11th century battle suggest an open landscape cut by gullies and small valleys where troops could be concealed, similar to the landscape we surveyed east and west of Fener. The remains of the fortress are not known, although a source quoted by Gautier suggests it was located 10km northeast of Silivri which would locate it within our study area (1975: 266, n. 3; although in a previous note it is suggested that the river Kalivri was located between Silivri and Herakleia, i.e. to the west; according to Bryennios' account, his father could see Alexios' camp from Kedoktos [Gautier 1975: 266, n. 2]). In practice, the fort at Kalovryi probably lay north of Silivri close to the line of the Anastasian Wall. A fuller account of the historical topography will form part of a forthcoming monograph on the Anastasian Wall (Crow, Ricci forthcoming). However, two further points emerge from this brief survey. Firstly, from the ninth century onwards there is no longer any recognition or memory of the Anastasian Wall as a feature in the landscape of southern Thrace; instead the feature that survived in the topographic memory was an aqueduct of Herakleia, the name for a road junction. Secondly, the fort of Kalovryi (*Kalobria*), dating from the sixth century at the latest, was located in or very close to our study area. It may have been situated between Fener and Akören (Turkish 'white ruin'). The relationships of these places with the course of the Via Egnatia, the main Roman road leading east towards Constantinople, is not known and the elucidation of this route remains a key goal for future research.

One other source of evidence relating to Byzantine land-use and land-holdings in the area between Silivri and Çatalca is two inscribed boundary stones. One found in a church (now destroyed) at Çatalca indicates the pasture of Ourbikiois Tzoutzoulakios and villages of Philia and Derkos located north of Çatalca and outside our immediate study area. The second stone records the same landowner but was found at Büyükçavuşlu, northwest of Silivri, and is indicative of Tzoutzoulakios' extensive land-holdings (Avramea 1987; Asdracha 1996: 323–24; Feissel 1998: 704). Such boundary markers are also found in Byzantine Anatolia and Greece showing the importance of both pastoral and arable land divisions in Byzantine landscapes (for boundary stones in Macedonia, see Lefort 2002: 279).

#### *Historic Landscape Characterisation of the Silivri region*

The method and database we used were modelled on a recent HLC project in the UK, though for our pilot Thracian HLC we significantly adapted them to suit the area's historic landscape and the available data sources (Turner 2005; 2007). We chose ESRI's ArcGIS 9.1 to undertake the mapping, and the data relating to each individual block of a specific landscape character type (known as a 'polygon' or a 'geometry') were recorded and stored using a Microsoft Access database (the data we created are available to download free via the Archaeology Data Service: <http://ads.ahds.ac.uk>).

We used two principal sources to inform our characterisation.

(1) IKONOS 1m black and white and 4m multi-spectral satellite data supplied by European Space Imaging LLC, Munich. (The methods used for digitising and georeferencing the satellite imagery are described separately: see Crow, Turner 2008.)

(2) Historic maps. The main map source used for the Silivri study area comprised a version of a British Ordnance Survey map produced at 1:25,000 in ca 1943. This map was based on an Ottoman survey made after the First Balkan War (1912–1913) and is available in the British Library, London. These maps include data on settlements, roads, topography and place-names, but do not show field divisions.

Where relevant, other data sources were also used, including digital versions of 20th century 1:50,000 Russian military maps and Google Earth (though high-resolution imagery was not available from this source when we undertook our HLC mapping in April and May 2007).

Our pilot HLC map for ca 200km<sup>2</sup> of the Silivri hinterland was undertaken at a scale of around 1:4,000, and it is intended for use at 1:10,000 or smaller (fig. 2). The smallest individual 'polygons' mapped were theoret-



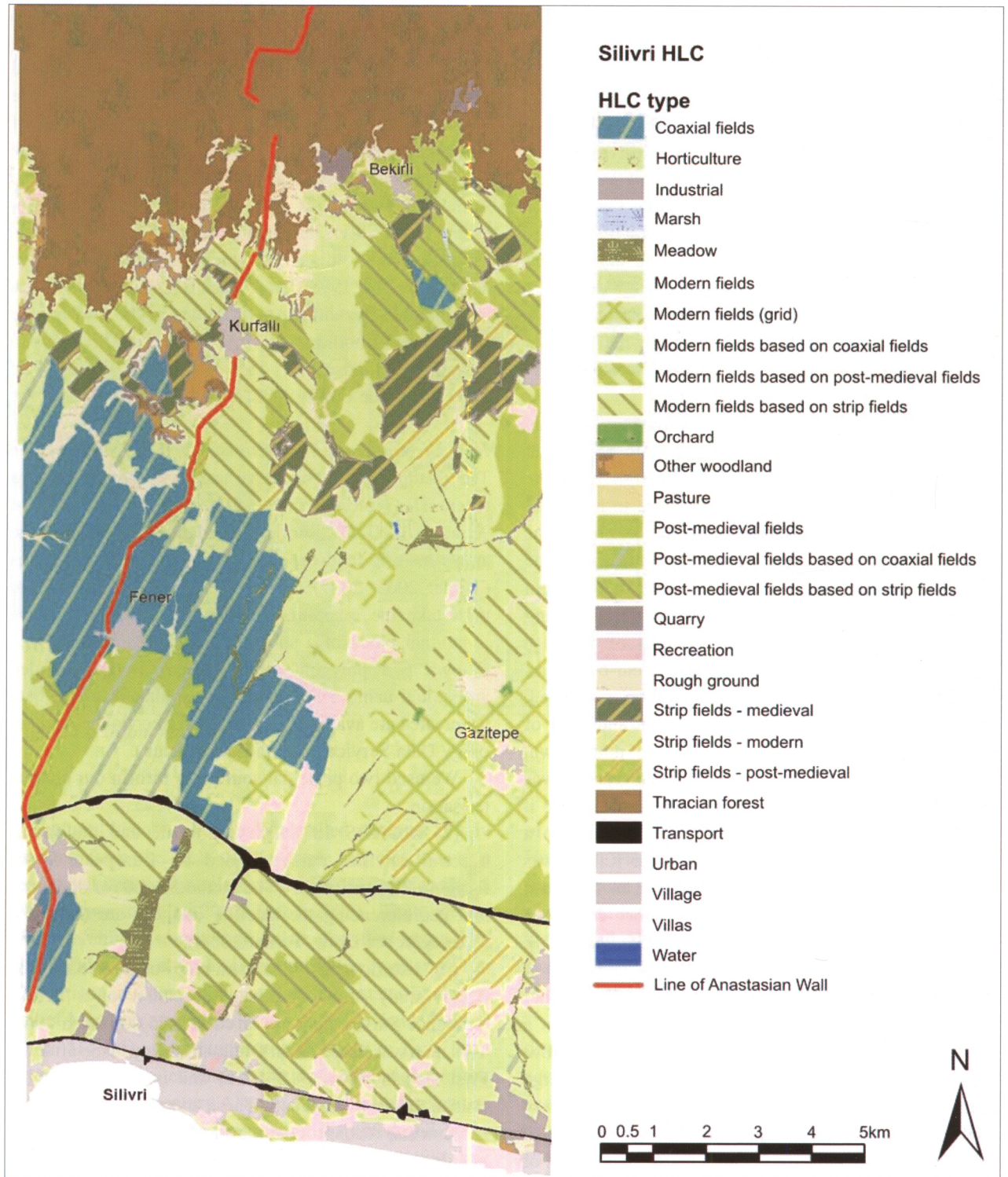


Fig. 2. The Historic Landscape Characterisation of the Silivri area

ically 1ha in area, though in practice smaller polygons were occasionally included. The whole area included in each polygon essentially comprises the same historic character type (or sequence of types) throughout its history.

We kept the number of different HLC types to a minimum for our pilot HLC in the hope that this would

make the database more user-friendly; further research could result in a more detailed characterisation. At the most basic level, the data can be displayed in a GIS to show where very simple categories of land-use lie, for example, fields, settlements or woodland. Because we can combine different variables to create maps using GIS, we can draw on our database to create more

complex maps for a range of purposes. For example, one of the principles of HLC is that it recognises the dynamic quality of landscapes. Landscapes have always changed, and they will continue to do so through human action and natural processes. However, not all landscapes change at the same speed or in the same ways. Our characterisations are designed to allow a sequence of character types to be recorded for each ‘polygon’. First, the present-day character type was recorded based on the evidence from the IKONOS imagery. Second, an interpretation of earlier phases of landscape character was made using all the available sources. This means that, as far as the sources we used allow, we can model earlier patterns of land-use in our study area and try to trace which landscapes have remained most stable and which have changed fastest.

*Silivri: a review of selected HLC types*

The HLC types we have used to map our Thracian study area for this project are shown in table 1. The following section describes the rationale behind our choices for some of the most common historic character types (more on the other types used is available via our website: Crow, Turner 2008; note that the principal HLC types do not generally refer to the crop under cultivation, but instead to the form of the fields in which they are grown).

Most of the land in the Silivri study area is agricultural. The fields lie in a broad, largely uninterrupted band between the Sea of Marmara to the south and the Thracian forest (see below) to the north. The only significant urban development lies in the south, along the coast and around the town of Silivri.

The boundaries between the fields are in general marked only by low baulks topped with long grass or weedy vegetation and sometimes (especially, but not exclusively, on the hillsides) by earthworks. The earthwork banks or lynchets can range from less than 0.10m high to over 1m. The baulks between the fields appear fragile and impermanent, but it is clear that in many parts of the study area they are of considerable antiquity. In places, for example, the line of the Anastasian Wall still acts as the boundary between fields, even though the monument itself has been completely destroyed and levelled.

Less frequently, modern wire fences have been put up around individual fields. The most common reason for this seems to be to enclose land before and after building new villas, which are increasingly frequent in this landscape. However, some agricultural fields have been enclosed in this way too. These are not single-strand barbed-wire fences, but instead concrete post and mesh fences which are often over 2m high.

There are also occasional hedges that have developed along the boundaries between fields. In the Silivri hinterland, these are clearly not part of the pattern of the traditional historic landscape, although they occur more frequently along the edges of roads and tracks in the northern part of the study area close to the edge of the Thracian forest. Satellite imagery, aerial photographs and field visits show that more established hedges are slightly more common around the villages to the north in the Thracian forest and towards the Black Sea, for example at Çiftliköy.

<i>Fields</i>
<b>Strip fields</b>
Strip fields – modern
Strip fields – post-medieval
Strip fields – medieval
<b>Coaxial fields</b>
Coaxial fields – post-medieval
<b>Fields</b>
Modern fields
Modern fields (grid)
Modern fields based on post-medieval fields
Modern fields based on post-medieval coaxial fields
Modern fields based on strip fields
Post-medieval fields
Post-medieval fields based on strip fields
Post-medieval fields based on coaxial fields
<b>Meadow</b>
<b>Orchard</b>
<b>Horticulture</b>
<i>Woodland and rough ground</i>
<b>Marsh</b>
<b>Other woodland</b>
<b>Rough ground</b>
<b>Thracian forest</b>
<b>Water</b>
<i>Settlement</i>
<b>Recreation</b>
<b>Transport</b>
<b>Village</b>
<b>Villas</b>
<b>Urban</b>
<i>Industrial</i>
<b>Industrial</b>
<b>Quarry</b>

Table 1. Silivri HLC types





Fig. 3. Modern strip fields at Çavuş Mezar Tepe (IKONOS image. Includes material ©2007, Space Imaging LLC. All rights reserved)

### Strip fields

As defined for the purposes of our project, strip fields are long, narrow fields that normally lie side-by-side in extensive blocks. Sometimes, individual strip fields or bundles of a few strips lie isolated where other strips that were once around them have been amalgamated into bigger fields through the removal of subdividing boundaries. This normally shows where one owner has acquired several contiguous strips and begun to farm them as one unit. It has been possible to identify several different types of strip fields for this project which probably have their origins in different periods.

(1) Strip fields (modern). In certain places, there are very long, narrow fields that lie in blocks like strip fields but have ruler-straight, surveyed boundaries. These probably represent older fields that have been reorganised in the 20th century. A good example is visible on the slopes of the Çavuş Mezar Tepe at 609740 4559300 (coordinates given in WGS 84 format). In fig. 3, the

modern strip fields lie in the centre of the image. Whilst they are perfectly parallel, the outer boundaries of the block of fields respect the sinuous field boundaries to the northeast and the stream to the southwest. On the north-western boundary they also respect the *old* line of the road from Fener to Akören (old spelling Akviran), which was realigned during the 20th century. This is an area with many strip-field systems, though to the south lie large 20th century industrialised arable fields. It seems most likely that straightened strip fields such as these represent modern reinterpretations of a traditional land-holding pattern.

(2) Strip fields (post-medieval). The suggested date range for this HLC type has rather poor chronological resolution. Most strip fields mapped as ‘post-medieval’ occur in the southern part of our study area in the immediate hinterland of Silivri. Whilst we have suggested ‘post-medieval’ as their likely date, they might well in fact have medieval or even Classical origins. Several factors suggest a long history.





Fig. 4. Strip fields on Hasırcı Düzliği, 2km southeast of Bekirli, viewed from the road between Akören and Bekirli (photograph: Sam Turner, July 2007)



Fig. 5. The ridge of Eski Fener Tepesi, showing probable medieval strip fields to the southwest (as earthworks [green] and cropmarks [red]) and to the northeast (surviving fields). 'A' on this figure indicates the location of a modern settlement hidden by the trees visible in fig. 6. Considerable areas of modern change, including modern strip fields, large modern arable prairies and modern villas, occupy the rest of the area. There is at least one Roman settlement site within the prairies, identified from the satellite image and confirmed by field survey, at 'B' (IKONOS image. Includes material ©2007, Space Imaging LLC. All rights reserved)





Fig. 6. Photograph showing the lynchets visible in fig. 5 to the south of the settlement (hidden in the trees, centre) marked at 'A' in fig. 5. Looking west across the Kara Mastos Dere towards Fener (photograph: Sam Turner, July 2007)

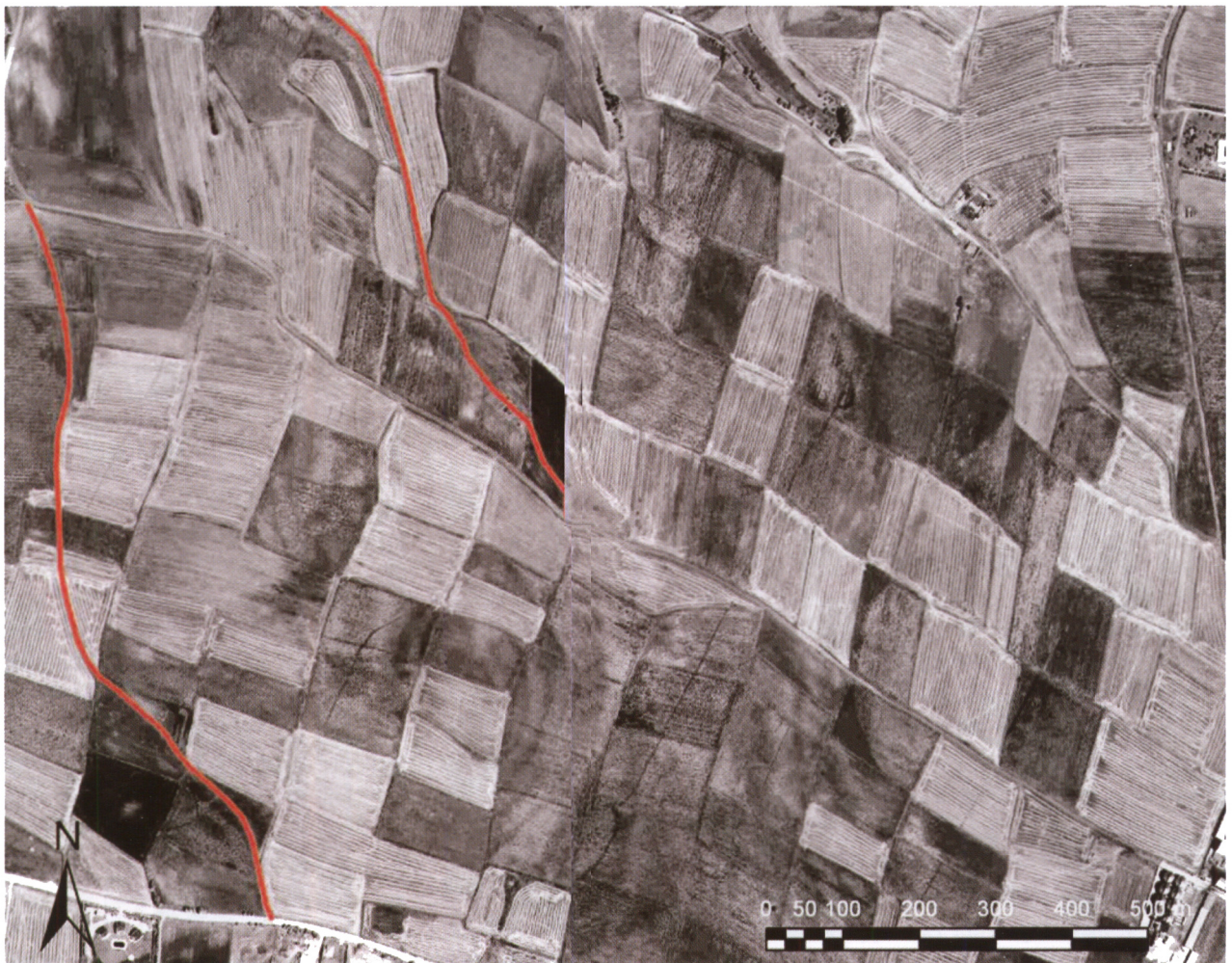


Fig. 7. Coaxial fields to the west of Fener. Two of the roads (highlighted with red lines) appear to overlie the pattern of fields. These roads must date to the later 19th century (at the latest) since they appear on the Ottoman/OS map. Cropmarks of possible medieval strip fields are visible in the southern part of the image. The origins of the coaxial field systems therefore probably lie in the early modern period (IKONOS image. Includes material ©2007, Space Imaging LLC. All rights reserved)



(a) The boundaries of many of these fields are not straight, but gently sinuous. Although this cannot be taken as a definite indicator of date on its own, it tends to be typical of older fields with origins before the mid 19th century.

(b) These strip fields 'fit' into the pattern of historic roads radiating out from Silivri (i.e. the strips are commonly at approximately 90° to the radiating roads, and normally abut them).

(c) Newer roads and short-cuts across corners often appear to cut through the pattern of strip fields. Modern fields of the 20th century also intrude in a few places, with ruler-straight boundaries on different alignments to the older fields.

(3) Strip fields (medieval). In the northern part of the study area, great swathes of territory are covered with narrow strip fields and larger fields that are clearly derived from the amalgamation of two or more strips. The strips are often put to different uses, so that on neighbouring strips different crops lie intermixed, sunflowers on one, wheat on the next, vegetables on the next and so on. This creates a distinctive and colourful landscape that is full of variety (fig. 4). These strips often share certain characteristics.

(a) Width. Where single strips survive and can be distinguished, they are often of regular widths. On level ground, these are most commonly ca 16–20m wide, although this does vary. On slopes, there seems to be slightly more variation with single strips up to ca 25m wide. The width of strips also varies along their course. The strip fields below Çilingir Tepe on Kurfalı Sırtı were investigated by the authors in July 2007. Our survey confirmed the observation from the satellite imagery that the strips were 16m in width at the south (uphill) end, where they met the boundary of the neighbouring field whose strips lie perpendicular to them. However, the satellite image clearly shows that the widths change as they progress to the north. It is very common for existing strips to be wider than this, probably (though not necessarily) because two or more strips have been amalgamated. Topography is also influential, and many strips have sides that prefer to follow the contour rather than maintain a strictly parallel arrangement. These often have visible lynchets.

(b) Length. The length of strips in strip fields varies considerably. In the study area they are rarely less than 175m or more than 650m.

(c) Boundaries. The exact boundary between strips is usually marked by weedy vegetation growing along the top of a low baulk. More substantial earthwork boundaries are also common. Despite being on fairly level ground, the strips on Kurfalı Sırtı are bounded by considerable earthworks. These are not really well-

defined banks, but more like great waves of earth, averaging just under 1m high. The remains of strip divisions that are no longer respected are sometimes still visible as earthworks or cropmarks.

The description of these strips as 'medieval' is a tentative one and needs to be investigated through further research and fieldwork. It is nevertheless supported by various pieces of evidence, including stratigraphic relationships between field systems of different periods. The evidence from retrogressive analysis of satellite imagery and from field observation suggests that strip fields on the southern slopes of the Eski Fener Tepesi have at some time been overlain by the coaxial field system around Fener (see below; field survey by the authors, July 2007). In figs 5 and 6, earthworks and curving cropmarks, very similar in form to the surviving strip fields in the northeast of the image, can be seen to underlie the pattern of coaxial fields in the southwestern part of the image. This shows the strips antedate the coaxial fields, strongly suggesting a medieval or early post-medieval date. By analogy, strip fields elsewhere in the study area with similar morphology probably have origins in the same period.

There are other, similar examples of parallel, gently curving linear cropmarks around the site of Eski Fener itself (604752 4558245), and on the hillside opposite this deserted settlement across the Fener Dere to the east. These may also indicate the lynchets of former strip fields that have been overlain with post-medieval coaxial field systems.

Strip fields of this sort were very common in similar arable areas elsewhere in medieval Europe; the sinuous form of the strips and the frequent substantial lynchets also suggest some antiquity.

#### Coaxial fields

This HLC type describes field systems with long, roughly parallel boundaries subdivided into blocky fields by short, transverse baulks (see figs 5–7). The fields tend to be roughly rectangular, though their boundaries and those of the wider field system are generally sinuous. In our study area they occur particularly around the village of Fener. The individual fields commonly tend to be rectangular or even nearly square, typically ca 100m by 140m. Individual fields are rarely (if ever) as big as 200m across. Some are smaller with sides of around 70m, particularly those immediately outside the village of Fener.

These 'coaxial fields' probably date to the early modern period. In places, more recent fields have clearly been created by subdividing blocks of coaxial fields, for example, the block that runs along the east bank of the Fener Dere. It seems likely that these small fields were once orchards or horticultural plots, as suggested by both

the Ottoman/OS map and the unusually frequent occurrence of trees in their boundaries today. In other places, the stratigraphic evidence suggests that certain roads depicted on the Ottoman/OS map post-date the coaxial fields, strongly suggesting a post-medieval date at the latest (for example, fig. 7). As discussed above, on the slopes of the Kara Mastus Tepe/Eski Fener Tepesi a likely medieval strip-field system clearly underlies the pattern of coaxial fields (figs 5 and 6).

#### Modern fields

‘Modern’ fields are those whose dominant character clearly derives from 20th century reforms of the farming landscape. Most modern fields in the study area have been created by reshaping earlier field patterns, so many of the surviving boundaries within such field systems are in fact ‘historic’. There are three clearly definable sub-types.

(1) Large expanses of modern fields in the study area comprise arable prairies. These have apparently been created both by the removal of earlier boundaries and by the enclosure of rough ground or pasture. They occur particularly frequently in the south and east of our study area and tend to comprise very large fields with few internal divisions.

(2) Many other blocks of modern fields preserve evidence in the character of their boundaries to suggest that their origins lie in the medieval or post-medieval periods as strip fields, coaxial fields or other fields. They were reshaped in the 20th century, principally by the removal of historic subdividing boundaries. Whilst some of the existing boundaries within these fields are new, most probably date to the 19th century or earlier. The evidence for earlier field patterns sometimes also comprises either lynchets or cropmarks (fig. 5).

(3) In places there are very regular, surveyed fields that have clearly been laid out on a uniform grid. They occur mainly in the eastern part of our study area, and particularly around the large 20th century settlement of Gazi Tepe. The establishment of such fields often seems to have involved the total restructuring of earlier landscapes, including the straightening and/or removal of historic roads. This process has created extensive 20th century farming landscapes. Nevertheless, the boundaries between the fields are still of the characteristic local type, very low baulks topped with grass or weedy vegetation.

#### Thracian forest

In the northern part of the study area, the ‘Thracian forest’ lies densely across the landscape. It is penetrated by certain roads and tracks – including modern logging tracks – but elsewhere has reclaimed extensive stretches of earlier features including the Anastasian Wall and its forts.

Without detailed ground survey, it is hard to characterise woodland like the Thracian forest from historic maps, aerial photography or satellite imagery. This has rightly been identified as a weakness in current HLC methods, though with further work it would be possible to integrate tree survey and other ecological survey methods (Williamson 2006; see, for example, Clare, Bunce 2006). The basic composition of the Thracian forest is scrubby oak woodland. This is cut on a rotation of about 20 years, so the trees tend to reach no more than 3 or 4m in height. After cutting, the wood is taken to charcoal burning stations like the one just north of Bekirli to produce charcoal which is sold to fuel the grills of Istanbul. Rights over different areas of the forest and its tree crops are held by people from the adjacent villages.

On its southern edge, the boundary between the forest and the fields is not totally stable, and some strip fields appear to have become overgrown. On the other hand, many fields seem to have been cut out of the forest, so that they have a similar form to the medieval assarts of western Europe. The date these fields were created is unknown, but many such clearings are recorded in their present locations on the historic Ottoman/OS map, suggesting post-medieval or earlier dates.

Also in the forest – particularly within a kilometre or so of the forest edge – are clearings used as pastures by grazing animals. Domesticated buffalo (which produce the famous Silivri yoghurt) and other cattle are grazed in the forests by villagers who bring their animals from the settlements to the south.

#### **Valuing historic landscape character and managing change**

The European Landscape Convention, of which Turkey is a signatory, recognises that change is one of the fundamental characteristics of landscape (Council of Europe 2000). Landscapes have always changed, and archaeologists’ long-term perspective puts them in an excellent position to appreciate how past landscapes have influenced those of the present and how they might contribute to the landscapes of the future. In Trakya, the historic landscape is subject to accelerating pressures for change. Towns and villages are growing, and all those in the study area are bigger now than they were in the 1940s. Significant industrial units are being constructed along the major roads into Silivri, and linear projects like gas pipelines and the new highway leading west from Istanbul towards Edirne and the rest of Europe cut across the historic grain of the fields. Modern villas and associated features – in particular concrete post and wire fences, and high walls – continue to be developed across the area. Development is particularly dense in desig-

nated villa development zones along the coast and inland from the town. Villas occur singly, in small groups and in large developments, and their impact on both the visual quality of the landscape and its historic pattern is considerable.

Individual archaeological sites are affected by these developments, though the most important receive some protection under planning restrictions and other laws. For example, where the southern end of the Anastasian Wall passes through the new 'Sunflower Villas' development immediately to the west of Silivri, a broad undeveloped corridor has been left to protect the monument and associated features from any damage. Nevertheless, the Wall does not exist as an isolated fragment of antiquity. Instead, it forms part of a cultural landscape that includes the old field systems and historic settlements through which it passes. Along the length of the Wall, and particularly near the coast, this broader landscape has been subject to unsympathetic industrial, residential and agricultural development which has severely impacted on its character and coherence (fig. 8).

Our simple HLC reveals that this landscape is not uniform but has a complex history that demands to be understood and appreciated. For example, it shows clearly that field systems of diverse types and periods lie around different villages. The coaxial fields around Fener contrast sharply with the strip fields around Kurfalı and Bekirli only a few kilometres to the north; in places it is clear that one form of landscape organisation has succeeded another. We do not yet understand the detailed histories behind these patterns, but in future the combination of data from remote sensing and HLC-type analysis with historical research and archaeological fieldwork will undoubtedly add greater definition.

Meanwhile, HLCs can help us value the historic landscape on a broader scale. Appreciating the landscape's time-depth can assist local authorities and others to set priorities for management and planning for the future (Fairclough 2006). Thus, proposed changes which reinforce the coherence of the historic grain might be encouraged; those that would disrupt or destroy it might be altered or prevented. For example, the HLC shows that even some entirely modern fields can help maintain the coherence of the historic landscape. The size and the low grass-topped baulks of the straight-sided 20th century fields around Gazi Tepe echo those of the older field systems around the neighbouring villages; they help sustain the variety and colour of the historic landscape. They contrast starkly with the modern arable prairies and the high wire fences around villa settlements, both of which have swept away the traditional pattern of boundaries.

The landscapes of eastern Thrace for more than one and a half millennia have been subject to major wars and military invasions, political intervention and population exchanges. Unlike our other eastern Mediterranean study area on the island of Naxos where we can expect a significant level of continuity in population and landscape use, for eastern Thrace a consequence of the proximity to the capital of two major empires has been a more tumultuous and potentially disruptive historical record. It might be assumed that these events and, in particular, the recent history of population exchanges could have resulted in an historically empty landscape, a sort of *tabula rasa* in terms of recognisable time-depth. In practice, our study has shown this not to be the case and there is a very significant diversity demonstrated through the application of HLC analysis. It is to be hoped that through further fieldwork and research into the documentation of the more recent Ottoman past we can achieve a greater resolution and understanding of the landscape history of this region.

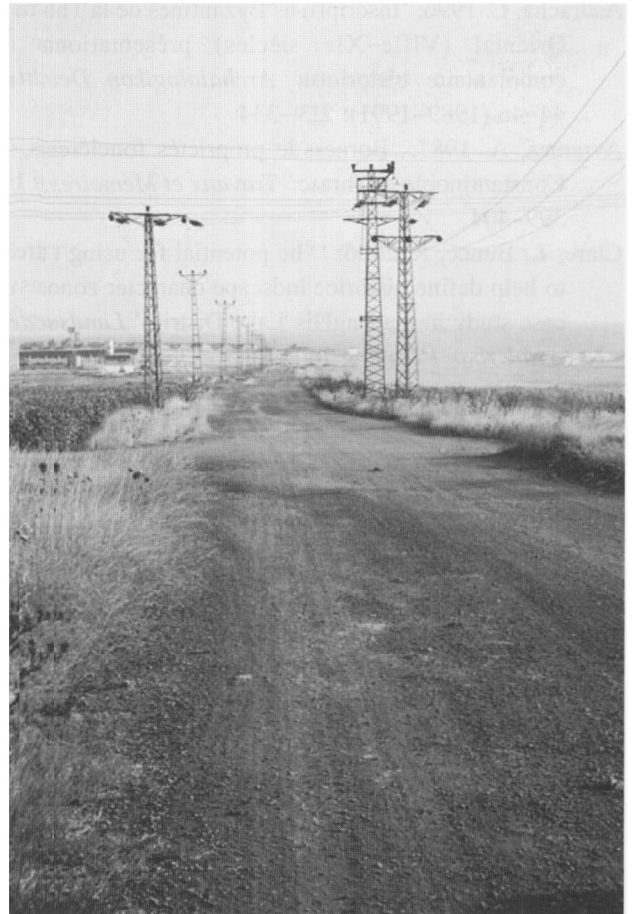


Fig. 8. The line of the Anastasian Wall west of Silivri is marked by a modern track with pylons and flanked by light industrial developments (photograph: Sam Turner, July 2007)

## Acknowledgements

Our research and fieldwork in Turkish Thrace formed part of the 'Unlocking Historic Landscapes in the Eastern Mediterranean Project' based at Newcastle University (2006–2007) and funded by the UK Arts and Humanities Research Council (AHRC) as part of their Landscape and Environment Programme. The authors are very grateful to the AHRC for this award and would also like to acknowledge the interest and support from our small advisory panel, especially Professor Malcolm Wagstaff and Dr Caroline Finkel. The fieldwork in Thrace was made possible through a permit from the Turkish Ministry of Culture and Monuments and we are also most grateful to them, to the British Institute at Ankara for their assistance and to the Editorial Board of *Anatolian Studies* for agreeing to reproduce the colour HLC maps. We would also like to thank the director and staff of the Istanbul Archaeology Museum and Professor Derya Maktav of Istanbul Technical University for their interest in our project.

## Bibliography

- Asdracha, C. 1996: 'Inscriptions Byzantines de la Thrace Oriental (VIIIe–XIe siècles) présentation et commentaire historique' *Archaiologikon Deltion* 44–46 (1989–1991): 239–334
- Avramea, A. 1987: 'Bornes de propriétés foncières de Constantinople et Thrace' *Travaux et Mémoires* 10: 399–404
- Clare, T., Bunce, R. 2006: 'The potential for using trees to help define historic landscape character zones: a case study in the English Lake District' *Landscape and Urban Planning* 74: 34–45
- Clark, J., Darlington, J., Fairclough, G. 2004: *Using Historic Landscape Characterisation*. London
- Council of Europe 2000: *European Landscape Convention* (European Treaty Series No. 176). Florence. <http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm> (accessed June 2009)
- Covel, J. 1998: *Voyages en Turquie 1675–77*. Ed. and trans. J-P Grégois, *Réalités Byzantines* 6. Paris
- Crow, J. 1995: 'The Long Walls of Thrace' in C. Mango, G. Dagron (eds), *Constantinople and its Hinterland*. Aldershot: 109–24
- 2002: 'Recent research on the late antique cities of eastern Thrace (Provincia Europa)' in L. Slokoska, A. Poulter (eds), *The Roman and Late Roman City*. Sofia: 342–51
- 2007: 'The Anastasian Wall and the Danube frontier in the sixth century' in L. Vagalinski (ed.), *The Lower Danube in Antiquity (the Fifth Century BC – the Beginning of the Seventh Century AD)*. Tutrakan: 397–401
- Crow, J., Ricci, A. forthcoming: *The Anastasian Wall and the Outer Defences of Constantinople*
- Crow, J., Turner, S. 2008: 'Unlocking historic landscapes in the eastern Mediterranean'. [http://www.shc.ed.ac.uk/projects/eastmed\\_landscape/silivri.html](http://www.shc.ed.ac.uk/projects/eastmed_landscape/silivri.html) (accessed June 2009)
- Crow, J., Turner, S., Vionis, T. forthcoming: 'Characterizing the Byzantine and later landscapes of Naxos'
- Dingwall, L., Gaffney, V. (eds) 2007: *Heritage Management at Fort Hood, Texas. Experiments in Historic Landscape Characterisation*. Oxford
- Fairclough, G. 2006: 'A new landscape for cultural heritage management: characterisation as a management tool' in L. Lozny (ed.), *Landscapes under Pressure: Theory and Practice of Cultural Heritage Research and Preservation*. New York: 55–74
- Feissel, D. 1998: 'Bulletin épigraphique' *Revue des Études Grecques* 111: 703–05
- Gautier, P. 1974: 'Le Typikon du Christ Sauveur Pantocrator' *Revue des Études Byzantines* 32: 1–145
- 1975: *Nicéphore Bryennios, Histoire, Text, Traduction et Notes* (Corpus fontium historiae byzantinae 9). Paris
- Gerolymatos, A. 2002: *The Balkan Wars*. New York
- Herring, P. 1998: *Cornwall's Historic Landscape: Presenting a Method of Historic Landscape Character Assessment*. Truro
- Highways Agency 2006: *Assessing the Effect of Road Schemes on Historic Landscape Character*. Bristol
- Koder, J. 1995: 'Fresh vegetables for the capital' in C. Mango, G. Dagron (eds), *Constantinople and its Hinterland*. Aldershot: 49–56
- Kozanoğlu, C. 1994: *Her yönüyle Silivri*. Silivri
- Laiou, A.E. 2002: 'The agrarian economy, 13th–15th centuries' in A.E. Laiou (ed.), *The Economic History of Byzantium*. Washington DC: 311–75
- Lefort, J. 2002: 'The rural economy 7th to 12th centuries' in A.E. Laiou (ed.), *The Economic History of Byzantium*. Washington DC: 231–310
- Lemerle, P. 1965: 'Thomas le slave' *Travaux et Mémoires* 1: 255–97
- Magdalino, P. 1978: 'Byzantine churches of Selymbria' *Dumbarton Oaks Papers* 32: 309–18
- 1993: *The Empire of Manuel I Komnenos 1143–1180*. Cambridge
- 1995: 'The grain supply of Constantinople, ninth–twelfth centuries' in C. Mango, G. Dagron (eds), *Constantinople and its Hinterland*. Aldershot: 35–47
- Mango, C., Scott, R. 1997: *The Chronicle of Theophanes Confessor*. Oxford
- Naval Intelligence 1920: *A Handbook of Turkey in Europe, Compiled by the Geographical Section of the Naval Intelligence Division*. London

- Oosthuizen, S. 2006: *Landscapes Decoded. The Origins and Development of Cambridgeshire's Medieval Fields*. Hatfield
- RCAHMS 'Canmore': 'Royal Commission on the ancient and historical monuments of Scotland, Canmore database'. <http://www.rcahms.gov.uk/> (accessed June 2009)
- Sayar, M.H. 1998: *Perinthos-Herakleia (Marmara Erelisi) und Umgebung, Geschichte Testimonien, Griechische und Lateinische Inscripten* (Veröffentlichungen der Kleinasiatische Commission 9). Vienna
- TAY 2008: 'Türkiye arkeolojik yerleşmeleri/The archaeological settlements of Turkey'. <http://tayproject.org/> (accessed June 2009)
- Turner, S. 2005: 'Devon Historic Landscape Characterisation: phase 1 report, January 2005' (report for Devon County Council, Exeter, UK). <http://www.devon.gov.uk/landscapes> (accessed June 2009)
- 2006a: *Making a Christian Landscape: the Countryside in Early Medieval Cornwall, Devon and Wessex*. Exeter
- 2006b: 'Historic Landscape Characterisation: a landscape archaeology for research, management and planning' *Landscape Research* 31: 385–98
- 2007: *Ancient Country: the Historic Character of Rural Devon*. Exeter
- Turner, S., Fairclough, G. 2007: 'Common culture: the archaeology of landscape character in Europe' in D. Hicks, G. Fairclough, L. McAtackney (eds), *Envisioning Landscapes: Situations and Standpoints in Archaeology and Heritage*. Walnut Creek CA: 120–45
- Williamson, T. 2006: 'Mapping field patterns: a case study from eastern England' *Landscapes* 7/1: 55–67